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09/891,022

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EXAMINER

CHO, HONG SOL

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 09/891,022 | Applicant(s) SALEH ET AL. | |
| | Examiner HONG CHO | Art Unit 2619 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-117, 119, 121, 122 and 124-126 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 113 is/are allowed.
- 6) ☒ Claim(s) 1-7, 14, 16, 17, 29-35, 42, 44, 45, 57-63, 70, 72, 73, 85- 91, 98, 100, 101, 114-117, 119 and 124-126 is/are rejected.
- 7) ☒ Claim(s) 8-13, 15, 18-28, 36-41, 43, 46-56, 64-69, 71, 74-84, 92-97, 99, 102-112, 121 and 122 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This office action is in response to the amendment filed on 04/28/2008. Claims 118, 120 and 123 have been cancelled. Claims 1-117, 119, 121, 122 and 124-126 are pending in the instant application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 29-31, 57-59, 85-87, 114-117, 119 and 124 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentall et al (US 6282170), hereinafter referred to as Bentall, in view of Counterman (US 6577595).

Re claims 1, 29, 57, and 85, Bentall discloses restoring traffic on alternate virtual path in an optical network (*restoring a virtual path using an alternate physical path*, column 6, lines 35-36). Bentall discloses determining spare capacity of each link of alternate routes (*identifying a plurality of nodes with resources, wherein nodes with resources are ones of said nodes having a resource necessary to support virtual path*,

figure 4, element 113). Bentall discloses selecting alternate routes after determining spare capacity on each route (*identifying an alternate path in response to said identifying said plurality of nodes with resources, said alternate path comprising ones of said nodes with resources*, column 6, lines 1-6). Bentall fails to disclose a candidate node determining if it has sufficient resources to support a virtual path and receiving information indicating it has sufficient resources to support a virtual path. Counterman discloses identifying a plurality of nodes with resources necessary to support virtual path (column 2, lines 32-41). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Bentall with the teaching of Counterman to implement the process of checking capacity of link at each node by a network management so that a given virtual path would be re-established through an alternate route with sufficient bandwidth.

Re claims 2, 30, 58, and 86, Bentall discloses restoring a virtual path using an alternate physical path (figure 4, element 114).

Re claims 3, 31, 59, 87 and 124, Bentall discloses determining spare capacity of each link of alternate routes determining if the candidate node has sufficient resources to support the virtual path, figure 4, element 113), configuring an alternate physical path by establishing a communication connection between nodes with resources (figure 3, element 102) and provisioning virtual path over the alternate physical path (figure 4, element 114).

Re claims 114 and 115, Bentall discloses determining spare capacity of each link of alternate routes (*determining whether a node under consideration would be appropriate for use in restoring said virtual path*, figure 4, element 113).

Re claim 116, Bentall inherently discloses finding an alternate path connecting nodes with ports to support additional data traffic.

Re claim 117, Bentall discloses allowing various levels of quality of service within network (column 17, line 65 to column 18, line 5).

Re claim 119, Bentall inherently discloses rejecting a candidate node if the candidate node does not have sufficient resources to support a virtual path in selecting an alternate path (figure 4, element 113).

Claims 4-7, 14, 16, 32-35, 42, 44, 60-63, 70, 72, 88-91, 98 and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentall in view of Counterman and further in view of Finn et al (U.S. 6728205), hereinafter referred to as Finn.

Re claims 4, 32, 60 and 88, Bentall and Counterman disclose detecting a failure in a virtual path by receiving a failure message packet (column 7, lines 29-31) and restoring a virtual path using an alternate physical path (figure 4). Bentall and Counterman fail to disclose provisioning a virtual path on a physical path between a first and a second node of an optical network wherein each one of nodes is coupled to at least one another of nodes by a plurality of optical links. Finn discloses network nodes connected through fiber optic cables and re-routing messages through a secondary path in case a primary path fails (column 16, lines 1-8). It would have been obvious to one having ordinary skill

in the art at the time the invention was made to modify the network of Bentall and Counterman to be utilized in optical network of Finn as suggested by Bentall (column 6, lines 35-36). The motivation is to get the benefit of high-speed network communications through fiber optic cables so that a prompt restoration is achieved through high-speed fiber optic communications.

Re claims 5, 6, 33, 34, 61, 62, 89 and 90, Bentall discloses all of the limitation of the base claim, but fails to disclose restoring a virtual path less than 2 seconds or 250 milliseconds. Finn discloses restoration time being about 50 milliseconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Bentall to be recovered less than 200 milliseconds by employing the concept of automatic protection switching in an optical network of Finn. The motivation is to provide fast restoration scheme and time so that switching to an alternate virtual path is transparent.

Re claims 7, 35, 63 and 91, Bentall discloses detecting a failure in a virtual path by receiving a failure message packet (column 7, lines 29-31).

Re claims 14, 16, 42, 44, 70, 72, 98 and 100, Bentall discloses intermediate nodes receiving a failure message (column 7, lines 33-35).

Claims 17, 45, 73 and 101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentall and Counterman in view of Finn and further in view of Azuma et al (U.S. 6430150), hereinafter referred to as Azuma.

Re claims 17, 45, 73 and 101, Bentall discloses all of the limitations of the base claim, but fails to disclose acknowledging a failure message and changing a state of the virtual path to down and releasing resources of the virtual path. Azuma discloses acknowledging a failure message and changing a state of the virtual path to down and releasing resources of the virtual path (column 6, lines 41-51; column 8, lines 15-18). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the network of Bentall by adding to it the process of Azuma so that unused resources would be relocated to alternate nodes for providing an alternate route.

Claim 125 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bentall in view of Counterman and further in view of Kawamura et al (US 5130974), hereinafter referred to as Kawamura..

Re claim 125, Bentall discloses detecting a failure in a virtual path, but fails to disclose forwarding a resource request to an adjacent node and waiting for a predefined time for a response to the resource request. Kawamura discloses establishing a new route to an adjacent node after receiving a grant signal in response to receipt of a request signal from an adjacent node indicating that the request is granted if an alternate route is available (column 2, lines 1-7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Bentall with the teaching of Kawamura to implement the process of checking capacity of link at each node by transmitting request message so that a given virtual path would be re-established through an alternate route with sufficient bandwidth.

Claim 126 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bentall in view of Counterman and Kawamura and further in view of Paulish et al (US 5130974), hereinafter referred to as Paulish.

Re claim 126, Bentall discloses detecting a failure in a virtual path, but fails to disclose forwarding a resource request to an adjacent node and if the response to the resource request is not received within a predefined time, initiating a subsequent failure measure. Kawamura discloses establishing a new route to an adjacent node after receiving a grant signal in response to receipt of a request signal from an adjacent node indicating that the request is granted if an alternate route is available (column 2, lines 1-7). Paulish discloses checking if an acknowledgment packet is received within a predetermined time (column 27, lines 8-11). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Bentall with the teaching of Kawamura and Paulish to implement the process of checking capacity of link at each node by transmitting request message so that a given virtual path would be re-established through an alternate route with sufficient bandwidth.

Allowable Subject Matter

4. Claim 113 is allowed.
5. Claims 8-13, 15, 18-28, 36-41, 43, 46-56, 64-69, 71, 74-84, 92-97, 99, 102-112, 121 and 122 are objected to as being dependent upon a rejected base claim, but would be

allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments filed on 04/28/2008 have been fully considered but they are moot in view of new ground of rejections.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong Cho whose telephone number is 571-272-3087. The examiner can normally be reached on Mon-Fri during 7 am to 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on 571-272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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/Hong Cho/

Hong Cho
Patent Examiner
6/24/2008